Ministerie van Verkeer en Waterstaat

Rijkswaterstaat

Essentials of specification of information needs

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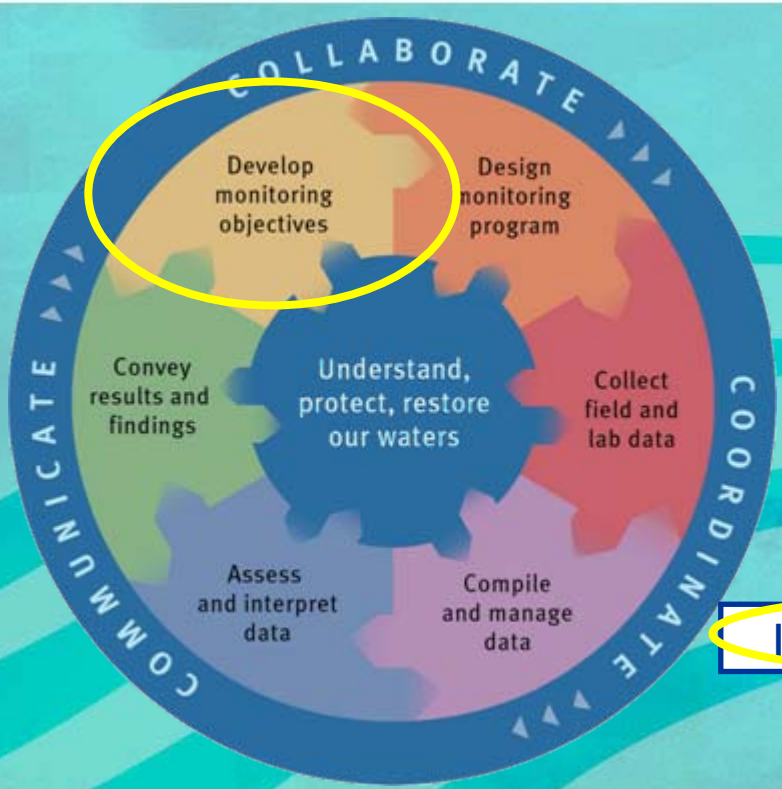
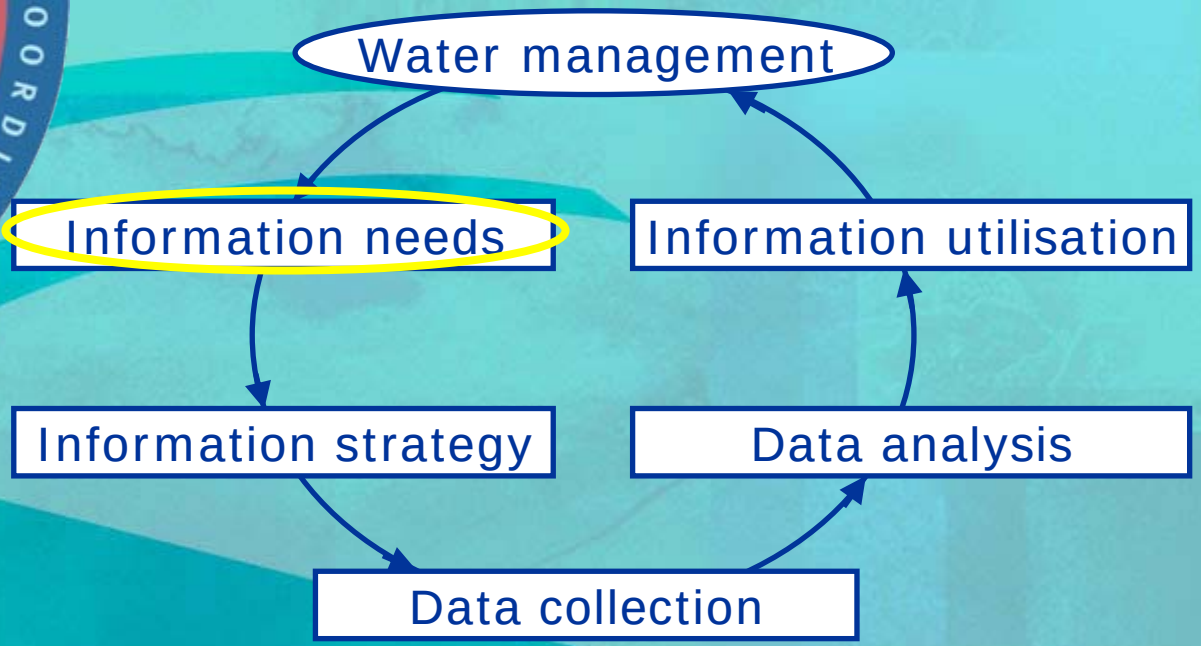
Monitoring / Information cycle





Why specify information needs?

- Data-rich but information-poor syndrome
  (Ward, Loftis & McBride 1986)
- “At present some of the systems for monitoring and gathering information about the environment in European countries are inefficient and wasteful. They generate excessive amounts of data on subjects which do not need it; and they fail to provide timely and relevant information on other subjects where there is an urgent policy need for better focused and consistent environmental assessment and reporting”
  (Pentreath 1998)

Dutch National Water Quality Monitoring Network

- Data-rich?
  - No: legal obligations
- Information-poor?
  - Yes, to some extent

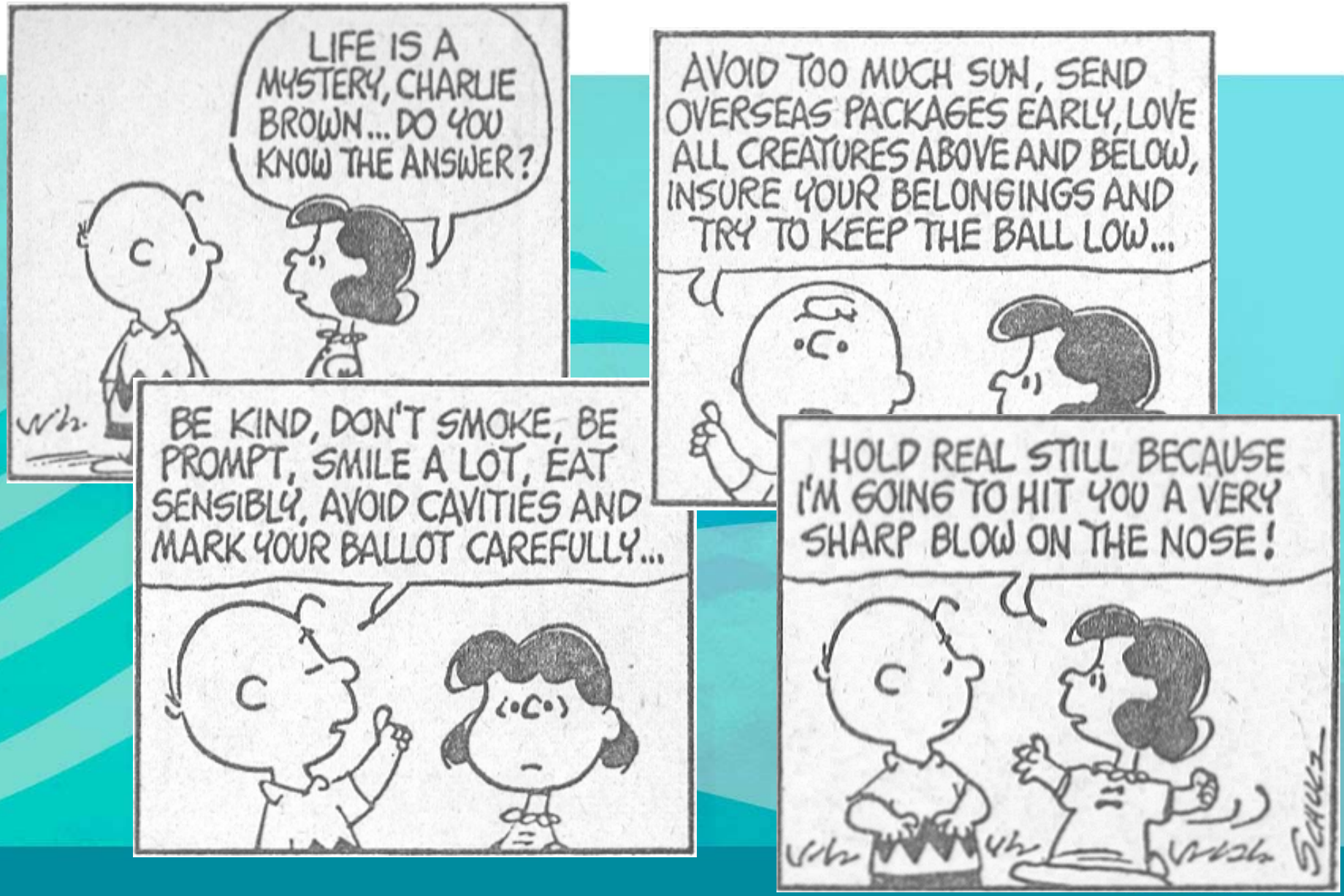
Monitoring obligations

Parameterdescription	Measured from	Measured to	Human consumption	Bathing water	Aquatic environment	WVO	NW4	WFD	ICPR	ICPM	ICPS	RIWA	Eurowaternet
General parameters													
Phenol-index	1952	1989											
Acidity	1952	2001											
Chloride	1952	2001											
Oxygen	1952	2001											
Percentage oxygen	1952	2001											
Suspended solids	1952	2001											
Temperature	1952	2001											
Conductivity	1959	2001											
Burning remnant	1960	2001											
Sulfate	1960	2001											
Sum Methyleneblue-active substances (anionactive)	1960	2001											
Fluoride	1969	2001											
Cyanide	1972	2001											
Mineral oil	1972	2001											

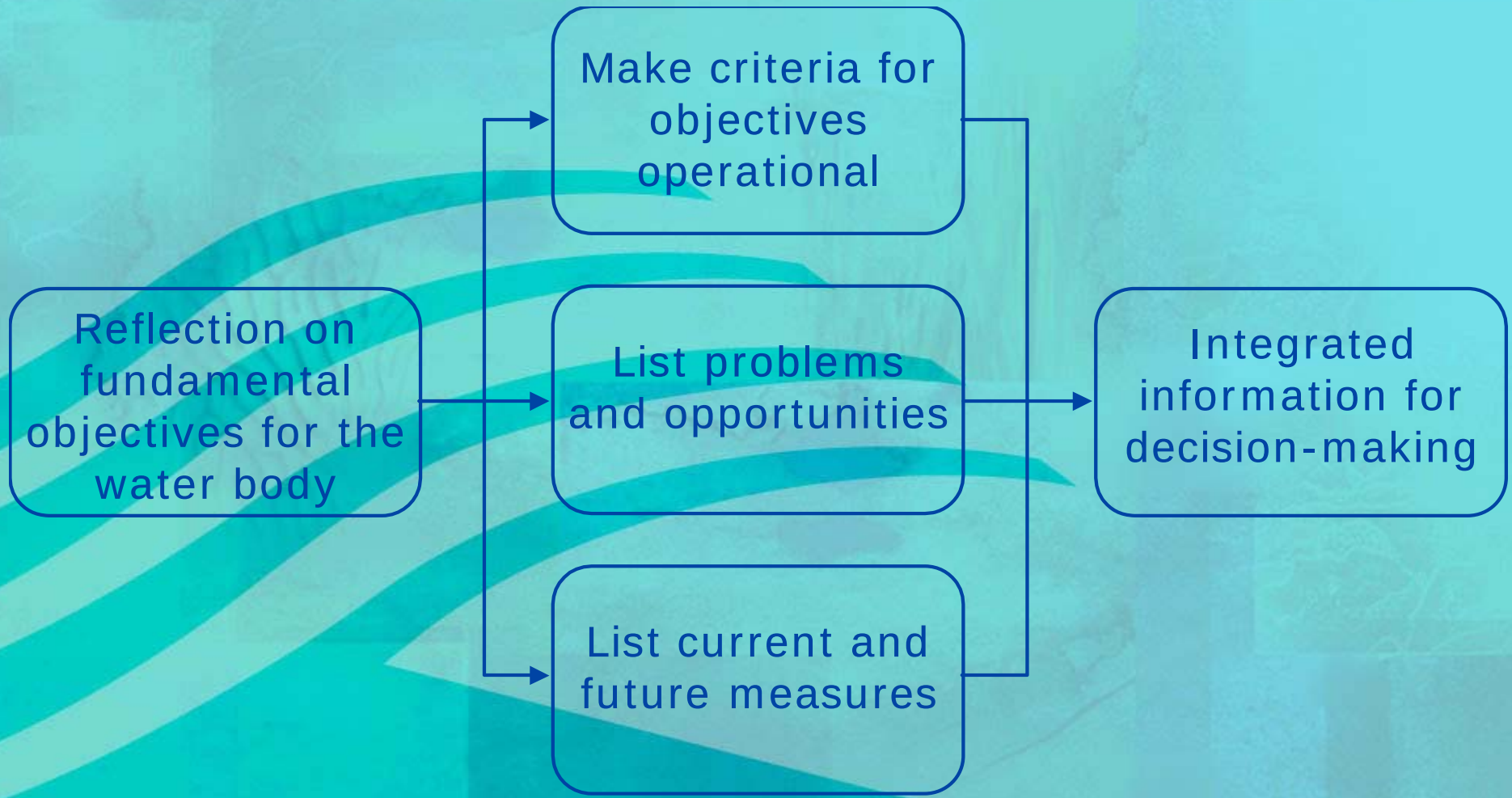
The specialist

Index or indicator

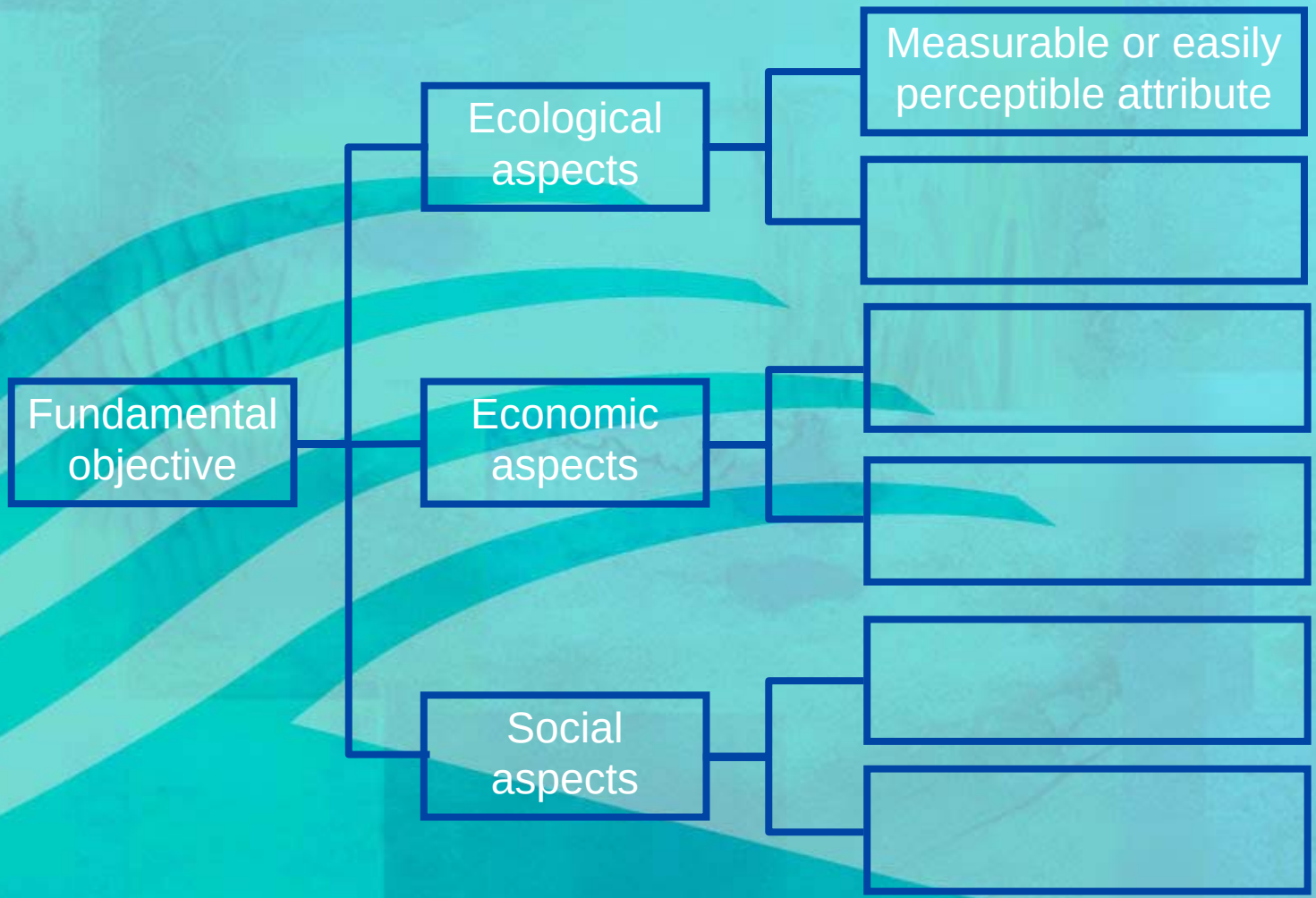
Integrated assessment



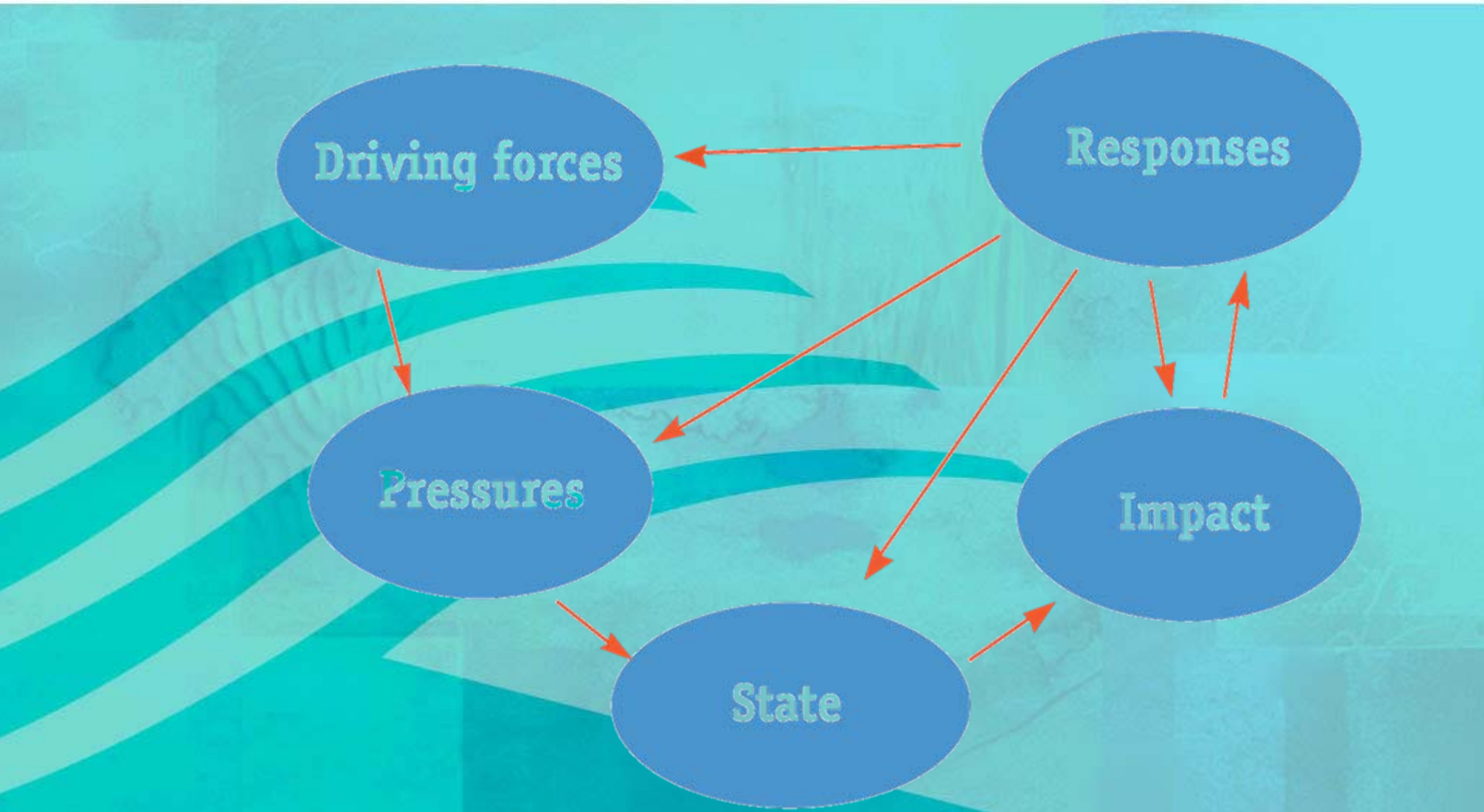
Integrating decision model



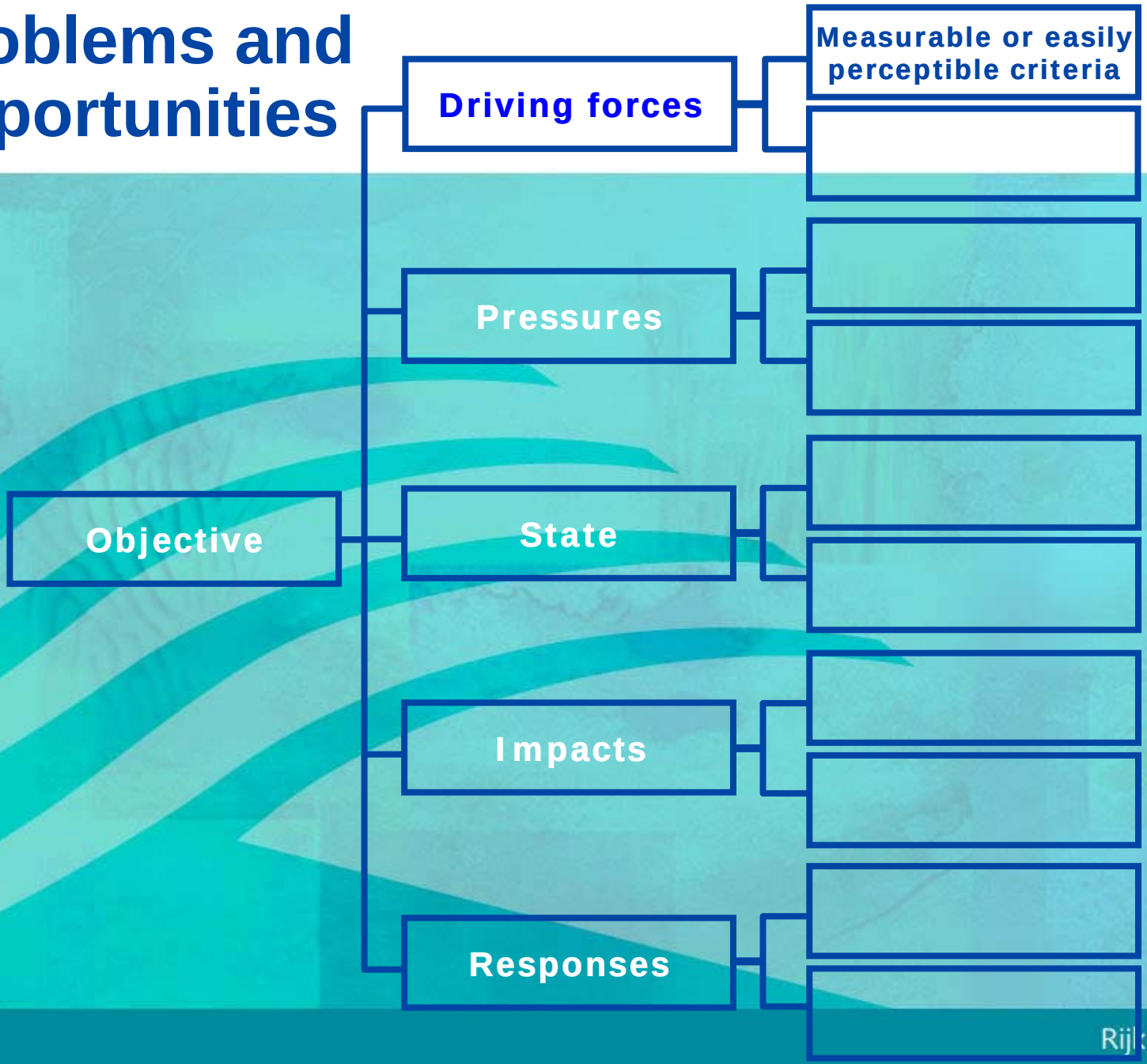
Objectives for the water body



DPSIR-framework



Problems and opportunities



Current and future measures

Analysis of water management issues

Management goals	Constraints
Secure drinking water supply for the future, both in quality and in quantity	Organic pollution can cause problems for drinking water supply
	Increased N or P concentrations cause eutrophication of some water sources and it requires higher water treatment costs for drinking water production
	Flooding occasionally threaten quality of water sources
	Occurrence of accidental pollution
	Bacteriological pollution
	Water scarcity in low water flow periods
	Low water levels may lead to increased concentration of pollutants

Indicators - problems

Ecological functioning

	Driving force	Pressure	State	Impact	Response
Eutro-phication	Number of individual households Water consumption for municipal purposes	The load of P and N from WWTP´s discharged into the river and its tributaries from point sources	High concentrations of P and N in groundwater High concentration of chlorophyll Water consumption index per capita	Changes in performance of the ecosystem, decreasing number of species of flora and fauna Algae blooming (blue-green algae, diatoms, green algae), including the algae toxic for the water fauna, for cattle and people	Construction of sewage systems and new sewage treatment plants Costs of removing N and P from the sewage
	Agricultural utilisation of the basin Use of artificial and natural fertilisers in agriculture	Washed off nutrients into the river	N and P concentrations, low O_2 concentration	Turbidity, changes in fish populations, fish kills, low diversity, water bloom	Investment into good agriculture practices

Information needs

Management goal	Constraints	Indicator	Parameters	Response Time
Achieving a good state of water ecosystems	River water and sediment quality are inappropriate	Agricultural utilisation of the basin	Area of the basin used for farming / Total area of the basin	a year
			Structure of agricultural use	a year
		Use of artificial and natural fertilisers in agriculture	Use of natural and artificial fertilisers in agriculture in mass unit per area unit	a year
		Construction of sewage systems and new sewage treatment plants	Costs of constructing sewage systems	a year
			Costs of constructing sewage treatment plants	a year
			Cost of modernisation of sewage treatment plants	a year
	Organic pollution	Number of population (households) connected to insufficient WWTP, not connected to WWTP	Number of connected/not connected households	Months

Lessons for monitoring

Analysis of functions, issues and uses required project teams to:

- take a river basin approach
- think about the spatial distribution of functions and issues in relation to water management
- take account of possible groundwater – surface water interactions for both quantity and quality

Lessons for monitoring

Structured breakdown of objectives required project teams to:

- think about the cause-effect chain where previous focus had been on status alone
- be aware of socio-economic factors next to the physico-chemical or ecological situation

Conclusion

- The approach of a water management analysis combined with the structured breakdown of water management objectives supports and facilitates an integrated design of monitoring